JOURNAL OF SCIENTIFIC COMPUTING

Volume 8, Number 1 March 1993

CONTENTS

A Molecular Dynamical Study of Granular Fluids I: the Unforced Granular Gas in Two Dimensions 1
I. Goldhirsch, M.-L. Tan, and G. Zanetti

Numerical Solution of the Kinematic Dynamo Problem for Beltrami Flows in a Sphere 41
V. A. Zheligovsky

Advances on the Theory of Generalized Bessel Functions and Applications to Multiphoton Processes 69
G. Dattoli, C. Chiccoli, S. Lorenzutta, G. Maino, M. Richetta, and A. Torre

JOURNAL OF SCIENTIFIC COMPUTING

Volume 8, Number 2 **June 1993**

CONTENTS

Numerical Simulation of Turbulent Flow in the Inlet Region of a Smooth Pipe 111
Alexander Yakhot and Steven A. Orszag

Conforming Chebyshev Spectral Methods for Poisson Problems in Rectangular Domains 123
Andreas Karageorghis

Spectral Multidomain Technique with Local Fourier Basis 135
M. Israeli, L. Vozovoi, and A. Averbuch

Parallelizing Implicit Algorithms for Time-Dependent Problems by Parabolic Domain Decomposition 151
M. Israeli, L. Vozovoi, and A. Averbuch

Solution of the Incompressible Navier-Stokes Equations by the Nonlinear Galerkin Method 167
T. Dubois, F. Jauberteau, and R. Temam

JOURNAL OF SCIENTIFIC COMPUTING

Volume 8, Number 3 September 1993

CONTENTS

Applying Asynchronous Parallel Characteristic Methods for Solving Systems of Hyperbolic PDEs 195
Ludmila Ioffe and Shlomit S. Pinter

On the Small-Scale Dynamical Behavior of Lattice BGK and Lattice Boltzmann Schemes 219
S. Succi, D. d'Humières, Y. H. Qian, and S. A. Orszag

Simulating Thermohydrodynamics with Lattice BGK Models 231
Y. H. Qian

Simulated Annealing for Data Modeling in Scientific Images 243
J. R. Parker and G. Groisman

On the Wavelet Based Differentiation Matrix 267
Leland Jameson

JOURNAL OF SCIENTIFIC COMPUTING

Volume 8, Number 4 **December 1993**

CONTENTS

The Use of Richardson Extrapolation for the Numerical Solution of Low Mach Number Flow in Confined Regions 307
B. Christer V. Johansson

Multilevel Adaptive Methods for Laminar Diffusion Flames 341
C. Liu, Z. Liu, and S. McCormick

A Noniterative Solution Approach for Parallel Pseudospectral Domain Decomposition 357
Hoa D. Nguyen and Seungho Paik

An Incomplete Nested Dissection Algorithm for Parallel Direct Solution of Finite Element Discretizations of Partial Differential Equations 373
M. Reza Mehrabi and Robert A. Brown

Distributive Relaxations for the Spectral Stokes Operator 389
Wilhelm Heinrichs